WHAT IS CLAIMED IS:

1. A reticle inspection system, comprising an optical subsystem configured to produce an aerial image of a reticle by simulating dose as a function of position that would be projected into a resist by an exposure system such that the aerial image is substantially equivalent to an image of the reticle that would be projected into the resist by the exposure system.

2. The system of claim 1, wherein said simulating comprises altering the aerial image to correct for differences between a numerical aperture at which the exposure system projects the image into the resist and a numerical aperture at which the optical subsystem produces the aerial image.

3. The system of claim 1, wherein the optical subsystem comprises a detector configured to produce the aerial image, and wherein said simulating comprises forming an intermediate aerial image at a numerical aperture approximately equal to a numerical aperture at which the exposure system projects the image into the resist and projecting the intermediate aerial image onto the detector.

4. The system of claim 1, wherein said simulating comprises altering interference of electric fields of p-polarized light at an image plane of the optical subsystem such that the interference is approximately equivalent to an interference of the electric fields of the p-polarized light at an image plane of the exposure system.

5. The system of claim 1, wherein said simulating comprises altering an intensity of p-polarized light in the aerial image such that the intensity is approximately equal to an intensity of the p-polarized light in the image projected into the resist by the exposure system.

6. The system of claim 1, wherein said simulating comprises altering an intensity of s-polarized light in the aerial image such that the intensity is approximately equal to an intensity of the s-polarized light in the image projected into the resist by the exposure system.

7. The system of claim 1, wherein said simulating comprises altering the aerial image to simulate refraction and transmission of p-polarized light and s-polarized light in the resist.

8. The system of claim 1, wherein the optical subsystem comprises an optical filter placed in an image plane of the optical subsystem, wherein transmission characteristics of the optical filter, at an operating wavelength of the exposure system, are selected to substantially match filter characteristics of the resist, at the operating wavelength.

9. The system of claim 1, wherein the optical subsystem comprises a spatial filter, and wherein the spatial filter comprises two equivalent objective lenses and an optical filter disposed at a focal point between the two equivalent objective lenses.

10. The system of claim 1, wherein the optical subsystem comprises a spatial filter and a detector, and wherein the spatial filter comprises a first equivalent objective lens configured to form an intermediate aerial image of the reticle, an optical filter disposed at a back focal plane of the first equivalent objective lens, and a second equivalent objective lens configured to project the intermediate aerial image onto the detector.

11. The system of claim 1, wherein the optical subsystem comprises an optical filter configured to alter polarization characteristics of light in the aerial image such that the polarization characteristics are substantially equivalent to polarization characteristics of light in the image projected into the resist by the exposure system.

12. The system of claim 1, wherein the optical subsystem is further configured to illuminate the reticle with light having polarization characteristics substantially equivalent to polarization characteristics of light projected onto the reticle by the exposure system.

13. The system of claim 12, wherein the optical subsystem comprises an optical filter placed in an image plane of the optical subsystem, wherein transmission characteristics of the optical filter, at an operating wavelength of the exposure system, are selected to substantially match filter characteristics of the resist, at the operating wavelength.

14. The system of claim 1, further comprising a processor configured to detect defects on the reticle by analyzing the aerial image, wherein a substantial portion of the defects comprises defects that would be printed by the exposure system.

15. A reticle inspection system, comprising an optical subsystem configured to alter one or more properties of light transmitted by a reticle and to project the light onto a detector configured to produce an aerial image of the reticle.

16. The system of claim 15, wherein the one or more properties comprise interference of electric fields of p-polarized light at an image plane of the optical subsystem.

17. The system of claim 15, wherein the one or more properties comprise an intensity of p-polarized light transmitted by the reticle.

18. The system of claim 15, wherein the one or more properties comprise an intensity of s-polarized light transmitted by the reticle.

19. A reticle inspection system, comprising an optical subsystem configured to form an intermediate aerial image of a reticle at a numerical aperture approximately equal to a numerical aperture at which an exposure system projects an image of the reticle into a

resist and to project the intermediate aerial image onto a detector configured to produce an aerial image of the reticle.

20. The system of claim 19, wherein the optical subsystem comprises an optical filter configured to alter an intensity of s-polarized light in the intermediate aerial image such that the intensity is approximately equivalent to an intensity of the s-polarized light in the image projected into the resist by the exposure system.

21. The system of claim 19, wherein the optical subsystem comprises an optical filter configured to alter an intensity of p-polarized light in the intermediate aerial image such that the intensity is approximately equivalent to an intensity of the p-polarized light in the image projected into the resist by the exposure system.